

## REMARKS

This Amendment is submitted in response to an Office Action mailed June 5, 2002. The Applicant thanks the Examiner for the careful review and consideration of the pending application. Applicant respectfully requests reconsideration of the subject application as amended herein.

Claims 1-30 are pending in the application.

Claims 1, 13, and 22 have been amended.

### Objection to claim 13

On page 2 of the Office Action, claim 13 is objected to. Claim 13 has been amended to overcome the objection. Withdrawal of the objection to claim 13 is respectfully requested.

### Rejections under 35 U.S.C. §102(b) over Lamey

On page 2 of the Office Action, claims 1-2, 13-14 and 21-23 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,045,870 (hereinafter, Lamey).

Applicant respectfully traverses the rejection as follows.

The Examiner at page 2 of the Office Action states that Lamey teaches all of the claimed elements of independent claim 1. Specifically, the Examiner states that Lamey teaches forming a dielectric layer on the surface of the second barrier layer. Applicant respectfully submits that Lamey does not teach the claimed limitation. Lamey teaches applying a polyimide layer on top of the barrier layer, but this polyimide layer is not a dielectric layer. The polyimide layer provides mechanical protection to the other layers from ink from the thermal ink jet. See Col. 1 lines 44-49. Since Lamey does not teach forming a dielectric layer on the surface of the second barrier layer, Lamey does not anticipate claim 1 of the present invention.

Noting that claim 2 depends from claim 1, Applicant respectfully submits that that claim is also not anticipated by Lamey.

Independent claims 13 and 22 contain a limitation similar to that in claim 1, which was shown above not to be anticipated by Lamey. Accordingly, Applicant submits that claims 13 and 22 are not anticipated by Lamey. Noting that claims 14 and 21 depend from claim 13, and that claim 23 depends from claim 22, Applicant respectfully submits that those claims are also not anticipated by Lamey.

Rejections under 35 U.S.C. §102(e) over Lui

On page 2 of the Office Action, claims 1-3 and 5 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,392,254 (hereinafter, Lui).

Applicant respectfully traverses the rejection as follows.

The Examiner at page 2 of the Office Action states that Lui teaches all of the claimed elements of independent claim 1. Applicant respectfully submits that Lui does not teach all of the claimed limitations of claim 1, as amended. Lui does not teach forming a via through a first portion of the dielectric layer and a first portion of one of the first and second barrier layers. Lui does not teach forming a via through a barrier layer at all. See Fig. 12, specifically items 132, 134, and 140, which are barrier layers through which no via passes. Since Lui does not teach forming a via through a first portion of the dielectric layer and a first portion of one of the first and second barrier layers, Lui does not anticipate claim 1 of the present invention.

Noting that claim 2-3 and 5 depend from claim 1, Applicant respectfully submits that those claims are also not anticipated by Lui

Rejections under 35 U.S.C. §103(a) over Hussein in view of Lamey

On page 4 of the Office Action, claims 1, 6-13, 15, 17-20, 22, 24, and 26-30 are rejected under 35 U.S.C. §103(a) as being obvious over Hussein in view of Lamey. Examiner states that Hussein teaches all the claimed features of the methods of independent claims 1, 13, and 22 with the exception of teaching forming a second barrier layer on the surface of the first barrier layer, and that Lamey teaches that missing element. To make a *prima facie* case of obviousness, it must be shown, among other things, that there is some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. There is no motivation to combine the Hussein and Lamey because the layer above the barrier layers in the two references are used for very different functions. The layer above the barrier layer in Lamey (25 in Fig 1) is just an organic overcoat to protect the lower layers from ink. See Col. 1 lines 44-49. The layer above the barrier layer in Hussein is used to form trenches and/or vias. There is no motivation to combine the references in this manner other than impermissible hindsight. Accordingly, Applicant respectfully submits that the 35 U.S.C. §103(a) rejection of claims 1, 6-13, 15, 17-20, 22, 24, and 26-30 based on Hussein in view of Lamey has been overcome and should be withdrawn.

Allowable Subject Matter

Claims 4, 16 and 25 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant thanks the Examiner for the indication of allowable subject matter. However, in view of the previously stated analysis, Applicant believes

that these claims are allowable based on their dependency from claims 1, 13, and 22 respectively, and rewriting is therefore no longer necessary.

## CONCLUSION

Applicant submits that in view of the amendments and remarks herein, claims 1-30 are now in condition for allowance, and indication of allowance is respectfully requested. It is believed that no fee is due with this amendment and response. However, if a fee is required, or if a credit is due, please charge or credit Deposit Account No. 02-2666.

Respectfully submitted,  
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Date: 8-1-02



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APPENDIX A

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Marked-Up Version of Amended Claims

1. (Amended Once) A method of forming a semiconductor device comprising:  
forming a first patterned conductive layer on a dielectric material on a substrate;  
forming a first barrier layer on the surface of the first patterned conductive layer;  
forming a second barrier layer on the surface of the first barrier layer; [and]  
forming a dielectric layer on the surface of the second barrier layer[.]; and  
forming a via through a first portion of the dielectric layer and through a first portion of  
one of the first and second barrier layers.
13. (Amended once) A method of forming a semiconductor device comprising:  
forming a first patterned conductive layer on a dielectric material on a substrate;  
forming a first barrier layer comprising silicon nitride on the surface of the first patterned  
conductive layer;  
forming a second barrier layer comprising silicon carbide on the surface of the first  
barrier layer; and  
forming a dielectric layer on the surface of the second barrier layer.
22. (Amended once) A method of forming a semiconductor device comprising:  
forming a first patterned conductive layer on a dielectric material on a substrate;  
forming a first barrier layer comprising silicon nitride on the surface of the first patterned  
conductive layer;

forming a second barrier layer on the surface of the first barrier layer; [and]  
forming a dielectric layer on the surface of the second barrier layer[.]; and  
forming a via through a first portion of the dielectric layer and through a first portion of  
one of the first and second barrier layers.